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PREPARATIONS FOR THE SEVENTH SESSION OF THE COMMISSION ON SUSTAINABLE DEVELOPMENT

Contribution of the United Nations Environment Programme: Activities of the United Nations Environment Programme regarding small island developing States

Report of the Executive Director

Summary

In its decision SS.V/3 of 22 May 1998, the Governing Council requested the Executive Director to consult with Member States, particularly developing countries, both individually and in regional and subregional groupings, on environmental aspects of oceans' management, including the problems of the sustainable development of small island developing States, and sustainable tourism, and, on the basis of those consultations, to prepare reports for the Governing Council at its twentieth session, with a view to submitting the reports as a contribution to the work of the Commission on Sustainable Development at its seventh session. The present report and the reports on oceans management and sustainable tourism, contained the addenda to this document, are prepared pursuant to that decision.

The present report is also prepared pursuant to Governing Council decision 19/18, of 7 February 1997, which requested the Executive Director to report on the steps taken to implement the Barbados Programme of Action for the Sustainable Development of Small Island Developing States to the body responsible for the review of the implementation of the Programme of Action

* UNEP/GC.20/1.

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to be held in 1999 and also to report on progress in that area to the Governing Council at its twentieth session. In addition, the report takes into account the views of the High-Level Committee of Ministers and Officials at its third meeting, held in Buenos Aires on 10 November 1998, and it is submitted for consideration by the Governing Council as a major UNEP contribution to the seventh session of the Commission on Sustainable Development.

Suggested action by the Governing Council

The Governing Council may wish to:

Authorize the Executive Director to finalize the report on implementation of the Barbados Programme of Action for the Sustainable Development of Small Island Developing States, on the basis of the draft report contained in the annex to the report of the Executive Director 1/ and the comments made at the Council thereon, and to transmit it to the Commission on Sustainable Development at its seventh session.

BACKGROUND

1. By its decision 19/18 of 7 February 1997, the Governing Council urged the Executive Director to take all appropriate measures to implement within available resources the Programme of Action for the Sustainable Development of Small Island Developing States. It also requested the Executive Director to report on the steps taken to implement the Barbados Programme of Action to the body responsible for the review of the implementation of that Plan of Action to be held in 1999, as well as to report on progress achieved at the twentieth session of the Governing Council.

2. By its decision SS.V/3 of 22 May 1998, the Governing Council also requested the Executive Director to consult with Member States on the environmental aspects of oceans management, including the problems of the sustainable development of small island developing States, and sustainable tourism, and, on the basis of these consultations, to prepare reports for the consideration of the High-level Committee of Ministers and Officials and the Governing Council at its twentieth session, with a view to submitting the reports as a contribution to the work of the Commission on Sustainable Development at its seventh session.

3. An earlier, abridged draft of the report was submitted for consideration to the High-Level Committee of Ministers and Officials at its third meeting. The Committee endorsed the contribution of UNEP on this matter to the Commission on Sustainable Development at its seventh session. The present draft of the report, as contained in the annex, takes into account the views expressed by the Committee.

4. In response to those requests, UNEP has prepared a draft report on implementation of the Barbados Programme of Action for the Sustainable Development of Small Island Developing States, for consideration by the Governing Council. The draft report, contained in the annex to the present report, highlights the environmental aspects of the Barbados Programme of Action for the Sustainable Development of Small Island Developing States, as

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1/ The present report.

well as the state of the environment and trends since the adoption of the Programme of Action. It also identifies past and current actions by UNEP to faciiitate implementation of the Programme of Action, as well as major future challenges for small island developing States and proposals for appropriate UNEP action to address those challenges. The draft report constitutes a major contribution of UNEP to the seventh session of the Commission on Sustainable Development. It will be revised as appropriate prior to the seventh session of the Commission, taking fully into account comments received at the third meeting of the High-Level Committee of Ministers and Officials of UNEP and the twentieth session of the Governing Council.

Annex

DRAFT REPORT ON IMPLEMENTATION OF THE BARBADOS PROGRAMME OF ACTION FOR SUSTAINABLE DEVELOPMENT OF SMALL ISLAND DEVELOPING STATES

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I. ENVIRONMENTAL ASPECTS OF THE BARBADOS PROGRAMME OF ACTION FOR THE SUSTAINABLE DEVELOPMENT OF SMALL ISLAND DEVELOPING STATES

1. The need to pay special attention to the environmental and economic problems hindering the sustainable development of small islands was explicitly recognized by the United Nations Conference on Environment and Development held in Rio de Janeiro in 1992 - the Earth Summit. Chapter 17 of the Programme of Action for Sustainable Development (Agenda 21), adopted at Rio, identifies it as one of the programme areas where new approaches for management and development at the national, subregional, regional and global levels are required.

2. Recognizing that the difficulties of small island developing States cannot be effectively solved by individual island States and without active international cooperation and assistance, the Earth Summit recommended the convening of a conference to consider the specific problems of small island developing States and to design a comprehensive programme for the solution of these problems.

3. This call for action was followed by the preparation and convening of the Global Conference on the Sustainable Development of Small Island States, held at Bridgetown, Barbados, in 1994, to promote focused and sustained action at the national, regional and international levels. The Conference adopted the Programme of Action for the Sustainable Development of Small Island Developing States and identified 15 priority areas in which the Programme should be implemented:

(a) Climate change and sea-level rise;

(b) Natural and environmental disasters;

(c) Management of wastes;

(d) Coastal and marine resources;

(e) Freshwater resources;

(f) Land resources;

(g) Energy resources;

(h) Tourism resources;

(i) Biodiversity resources;

(j) National institutions and administrative capacity;

(k) Regional institutions and technical cooperation;

(l) Transport and communication;

(m) Science and technology;

(n) Human resource development;

(o) Implementation, monitoring and review.

4. The focus of the Programme of Action is on actions promoting sustainable development, with the recognition that frequently stressful environmental conditions and relatively narrow resource bases are among the main factors limiting the development options of small island developing States and jeopardizing their rich and diverse cultural heritage. Accordingly, their continuing development will critically depend on, first, the full exploitation of the comparative advantages offered by their unique terrestrial and marine resources, including their rich biodiversity, and, second, their effective adaptation to global environmental change.

5. The protection and development of small island developing States and other small islands in many respects share the problems apparent in the protection of marine and coastal environment elsewhere. There are certain characteristics peculiar to their situation, however, which require specific approaches if sustainable development is to be ensured.

6. In most cases the small size of these States precludes greater variability and abundance of terrestrial living and non-living resources and the development of economies on a scale which could be competitive at the international level. In addition, their geographical dispersion and isolation from markets of other countries render small island developing States less competitive.

7. The small size, isolation and relative paucity of resources are not, however, the only factors causing the environment and social and economic development of small island developing States to be generally vulnerable. Most small island developing States are located in geographical areas where they are exposed to periodic hostile environmental conditions and events, such as, hurricanes, cyclones, tsunamis, storm surges, volcanic eruptions, landslides and more, which, when they occur, affect large parts or even the entirety of the islands. The relatively uniform climate and soil conditions usually limit the agricultural production of the islands to a few crops, making them heavily dependent on import of other products. The predicted consequences of climate change will further increase the vulnerability of small island developing States.

8. Although tourism currently represents a major economic sector, the vastness of the seas surrounding small island developing States is, in the long term, probably their major - if not their only - comparative advantage over the continental countries. The wealth contained in their exclusive economic zones is considerable, albeit largely underutilized. It provides small island developing States with their major source of animal proteins, and the fisheries and mineral resources of their exclusive economic zones are, at least potentially, their most important assets of interest to the world market.

9. The environmental aspects of the issues reviewed above are numerous and are addressed in the Programme of Action as an integral part of the associated developmental issues. Moreover, some of the special environmental problems of small island developing States are also addressed through existing global and regional agreements and programmes in which small island developing States participate.

II. PAST AND PRESENT ACTIONS BY UNEP TO FACILITATE THE ENVIRONMENTAL ASPECTS OF THE BARBADOS PROGRAMME OF ACTION

A. Legislative authority

10. The 1994 Conference which adopted the Barbados Programme of Action recognized the role of UNEP in providing policy guidance and coordination in the field of environment, including the implementation of the Programme of Action. In response to this recognition, UNEP started mobilizing its programme elements to contribute to the implementation of the Programme of Action and, in 1996, developed and adopted an integrated programme to meet the environmental challenges facing small island developing States. At its eighteenth and nineteenth sessions, in 1995 and 1997 respectively, the Governing Council requested the Executive Director to take appropriate action to implement the Programme of Action, and encouraged UNEP to adopt an integrated approach in addressing the needs of small island developing States. In addition, at its fifth special session, in 1998, the Governing Council requested the Executive Director to consult with Member States, particularly developing countries, both individually and in regional and subregional groupings, on environmental aspects of oceans management, including the problems of the sustainable development of small island developing States, and, on the basis of those consultations, to prepare a report for the consideration of the High-level Committee of Ministers and Officials and the Governing Council at its twentieth session, with a view to submitting the report as a contribution to the work of the Commission on Sustainable Development at its seventh session.

B. Focus of UNEP activities

11. Wherever appropriate, the problems of small island developing States are addressed primarily in the broad framework of the relevant regional components of the regional seas programme.

12. Special attention in the implementation of the Programme of Action is focused on promoting efficient protection of resources through integrated island management programmes, including, in most cases, the totality of the islands' terrestrial environment, their coastline and the adjacent exclusive economic zones. Thus, in the framework of the regional seas programme, the totality of several Mediterranean islands was included in coastal area management programmes and several pilot projects on integrated coastal area management have been or are being carried out in Caribbean small island developing States - the Dominican Republic, Saint Vincent and the Grenadines and Saint Lucia - and in the Comoros.

13. In several regions regional action plans were adopted for the implementation of the Programme of Action. They reflect the particular priorities of the small island developing States involved, as well as their resource capabilities to implement the adopted plans. They also provide the general framework in which regional and global organizations and programmes, as well as bilateral and multilateral donors, are expected to contribute to implementation of the Programme of Action.

14. National and regional project proposals are under preparation, with a view to their submission for consideration by a meeting of donors, planned to be arranged by the Department of Economic and Social Affairs, in cooperation with UNEP, in February 1999. Several national project proposals and a regional proposal, based on a waste management strategy formulated by the Indian Ocean small island developing States, have already been completed. The preparation of additional national proposals, as well as a regional project proposal, is under way for the Indian Ocean, Mediterranean and Atlantic Ocean small island developing States. A forum for small island developing States in the Indian Ocean, Atlantic Ocean and Mediterranean Sea is being organized, for November 1998, in cooperation between UNEP, the Island and Small States Institute of Malta and the Government of Malta, to finalize these project proposals.

15. Assistance is being provided by UNEP to small island developing States in preparation of their regional position papers for submission to the Commission on Sustainable Development at its seventh session. The preparation of two position papers is under way: one for the South Pacific with assistance provided by New Zealand, and another for the Indian Ocean, Atlantic Ocean and the Mediterranean with assistance from the Government of Malta. Both position papers will be adopted by regional ministerial-level meetings before their submission to the Commission. The preparation of a similar input to the seventh session of the Commission on Sustainable Development is planned for the Caribbean small island developing States, with assistance from the United Kingdom of Great Britain and Northern Ireland.

16. The application of island systems management, developed by the Organization of Eastern Caribbean States (OECS), was promoted through the Island V Conference held in Mauritius in 1998.

17. UNEP is contributing to the formulation of a vulnerability index, designed to assess the ecological and economic fragility of small island developing States. The index is expected to reflect the constraints arising from the small size and environmental fragility of small island developing States, as well as the incidence of natural disasters, and the consequent constraints to economic development. The Government of Malta offered to host the centre for the computation of the index on an ongoing basis.

18. In cooperation with the European Commission, UNEP is preparing joint European Union/UNEP state-of-the-environment assessments for the small island developing States covered by the Lomé Convention, in order to help identify regional environmental concerns, priorities and policies of relevance to the Lomé 2000 negotiations of the European Union.

19. In addition to the activities listed above, UNEP also contributed to the implementation of the following specific priority areas identified in the Barbados Programme of Action:

(a) Climate change and sea-level rise: Using the regional seas programme, in which small island developing States participate, regional assessments of the environmental and social and economic impacts of climate change and sea-level rise were prepared. As a follow-up, several similar site-specific assessments were prepared in the small island developing States of the Mediterranean and Caribbean regions (e.g., Malta and Saint Lucia).

The Intergovernmental Panel on Climate Change (IPCC) Technical Guidelines for Assessing Climate Change Impacts and Adaptations were used in preparing assessments for two small island developing States: Cuba and Antigua and Barbuda. Haiti, Mauritius and Niue are included in a UNEP project, supported by the Global Environment Facility (GEF) aiming at national capacity-building, defining options for response strategies, and implementing adaptation measures and response strategies;

(b) Management of wastes: Several small island developing States were assisted through training of their technicians and managers in the development of their national and regional waste management strategies and practices. In late 1996, a regional training workshop was organized in the framework of the regional seas programme on that subject for Caribbean small island developing States, with the participation of managers from two small island developing States from other regions (Cape Verde and Fiji). A similar workshop was organized, in late 1997, on waste management in small island developing States in the Indian Ocean region. A waste management strategy was formulated for the Indian Ocean small island developing States at that workshop. Guidelines for municipal solid waste management in small island developing States in the South Pacific region are being finalized and will be tested in the near future. Assistance in the management of wastes from land-based sources was provided in 1998 to Trinidad and Tobago;

(c) Coastal and marine resources: Support is being provided for the subregional and regional cooperation of small island developing States in promoting the protection, restoration and sustainable use of coral reefs and associated ecosystems. In the framework of the International Coral Reef Initiative, a regional workshop was held in Seychelles, in 1996, to develop the basis for a strategy and action plan for the conservation and management of coral reefs in the eastern African region. A report entitled "Reefs at risk" was published in cooperation with the World Conservation Monitoring Centre (WCMC), the International American Center for Living Aquatic Resources Management (ICLARM) and the World Resources Institute (WRI). A proposal was prepared for the establishment of the International Coral Reef Action Network in the framework of relevant parts of the regional seas programme;

(d) Freshwater resources: This problem was approached through an integrated approach to the management of oceans, coastal waters and freshwater. Specific UNEP activities included: capacity-building through workshops, training courses and individual training; improving access to environmentally sound technologies promoting efficient use of freshwater resources; and implementation of the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities. A workshop on the integrated management of freshwater, coastal and marine resources in small island developing States was held in December 1997; training was provided for managers in Mediterranean small island developing States in the framework of the regional seas programme; and a Source Book on Technologies for Augmenting Freshwater Resources in Small Island States was prepared and issued;

(e) Tourism: Using methodology developed by UNEP, the impact of tourism in small island developing States is being assessed. In cooperation with the World Tourism Organization, a conference was organized on tourism in small island States and other islands, in Lanzarote, Canary Islands, Spain,

in late 1998. Both conferences were convened to review the tourism-related problems of small island developing States and to promote environmentally sound approaches to the development of tourism. With the assistance provided by United States Agency for International Development (USAID), pilot projects are being carried out in several Caribbean small island developing States (Barbados, Jamaica and Saint Lucia) on assessment of the impacts of tourism and application of best management practices. A training course on their siting and design of tourist facilities was held in Tobago, in 1998;

(f) Biodiversity resources: Within the overall framework of the Convention on Biological Diversity, through its technical advisory services, UNEP is assisting a number of small island developing States in the formulation and implementation of their national biodiversity policies, strategies and action plans. A GEF-funded regional project implemented in 15 small island developing States in the framework of the South Pacific component of the regional seas programme aims to protect their biodiversity by facilitating the establishment of conservation areas, with agreed criteria for development based on long-term ecological sustainability. To date, the project has identified 17 conservation areas which are at various stages of planning, establishment and implementation. Biodiversity-related projects (biodiversity country studies, biodiversity data management, national biosafety frameworks and the development of national biodiversity strategies and action plans) have been also carried out through GEF-funded UNEP projects in the Bahamas, Barbados, Cuba, Mauritius, Seychelles, the Solomon Islands, Saint Lucia and Vanuatu;

(g) National institutions and administrative capacity: Recognizing that, in most small island developing States, the national capacities needed for the implementation of the Programme of Action are inadequate, UNEP continued, through meetings, training courses and its regional advisory services programme, to provide training of national experts, thus enhancing the technical and managerial capacities of small island developing States for environmental management. A workshop on implementation of the Convention on Biological Diversity and a training seminar in environmental law for African lusophone countries were held in Maputo, in 1997, with participants from several African small island developing States. A workshop on the implementation of international conventions, including the Convention on Biological Diversity, was held in Maldives, in 1997, for small island developing States in the South Asia Cooperative Environment Programme (SACEP) region. Assistance in the development of national environmental legislation and policy was or is being provided to Barbados, Cape Verde, Cuba, Dominican Republic, Fiji, Jamaica, Kiribati, Maldives, Mauritius, Samoa, Sao Tome and Principe, Seychelles, Singapore, Saint Kitts and Nevis, Tonga, Trinidad and Tobago and Tuvalu;

(h) Science and technology: An assessment of the state of the environment in small island developing States is under way. In order to promote exchange of information and experience, participants from small island developing States were included in relevant workshops and conferences organized by UNEP, and an island website was created to facilitate access to information about small island developing States. Transfer of technology was also promoted by exchange of information and experience through the network of cleaner production centres operated by UNEP, encompassing Fiji, Malta, Maldives, Samoa and several Caribbean States;

(i) Implementation monitoring and review: UNEP monitors and reviews the implementation the Programme of Action on a continuous basis and prepares reports on the status and progress in its implementation. As the designated task manager for the Commission's reports on climate change and sea-level rise, waste management and biological resources, inputs on small island developing States were prepared by UNEP for consideration by the Commission on Sustainable Development at its sixth session.

C. Sources of financial and human resources for implementing the environmental aspects of Barbados Programme of Action

20. The financial and human resources provided from the UNEP Environment Fund for activities related to small island developing States are relatively small. Consequently, UNEP relies heavily on external sources of funding. GEF remains one of the major potential sources of such funds. Other sources include trust funds operated under the regional seas programme, direct support of certain activities by Governments, such as the support provided by Malta, New Zealand and the United Kingdom for the preparation of small island developing States position papers for the Commission on Sustainable Development at its seventh session, and organizations interested in the joint implementation of specific activities. An example of the latter is the cooperation with the European Commission on the preparation of a joint, European Union/UNEP state-of-the-environment report for small island developing States participating in the Lomé Convention, for which the Commission has provided funding to the tune of $567,000.

III. STATE OF THE ENVIRONMENT AND TRENDS SINCE THE ADOPTION OF THE BARBADOS PROGRAMME OF ACTION

21. There are 36 small island developing States and five dependent territories in the Alliance of Small Island States (AOSIS). The total population of the AOSIS countries is about 29 million.

22. Most small island developing States are located within the tropics and range in size from aggregations of scattered atolls to relatively large land masses. Atoll States are particularly vulnerable: in most cases they are small, low-lying, sandy and infertile, densely populated and poorly endowed with resources and opportunities for land-based development. Most small island developing States are characterized by high rate of population growth relative to their carrying capacity; a physically fragile environment; a high dependence on foreign development assistance; a high level of urban unemployment and rural under-employment; extremely vulnerable and undiversified economies; and, in some cases, substantial rates of outward population migration resulting in critical losses of skills to the economy.

23. In all small island developing States the ratio between the surface area of their exclusive economic zones and their land mass is disproportionately large. Fisheries play a critical role in the lives and economy of island communities, providing a basic and vital source of food, employment where commercial production is possible, and national income from the sale of fishing rights (in the form of access fees) and exports of fish and fishery products (export taxes). According to the Food and Agriculture Organization of the United Nations (FAO), the per capita consumption of fish

in many small island developing States exceeds 50 kg per year, and in one case is as high as 133 kg, compared with an annual average consumption rate of 9 kg in developing and 27 kg in developed countries.

24. Small island developing States are known for their rich biodiversity and the high degree of endemism of their species. There are more than 4,000 species of plants and animals that are found only in small island developing States. Owing to the small size of many small island developing States and the endemic nature of many species, the biological diversity of small islands is extremely fragile. Any change in environmental conditions, including the introduction of alien species, is likely to have an adverse impact on a high proportion - if not all - of their habitats and species. In the case of endemic species, this frequently results in extinction, causing irreversible loss of genetic resources. Approximately 75 per cent of the documented animal extinctions since 1600 have occurred on non-continental islands and another 3,000 species are known to be threatened. The ecosystems of small island developing States provide "ecological corridors", linking major areas of biological diversity around the world. Maintaining the biological diversity of small island developing States is, therefore, globally important and merits particular attention.

25. In many small island developing States deforestation and forest degradation are on the increase. These trends have led to the extinction of numerous animal and plant species, the greater exposure of the islands to the impacts of strong winds, considerable soil erosion, the depletion of wildlife and the increased incidence and severity of floods and landslides. In the case of the loss of mangroves, critical spawning habitats for inshore fisheries are also lost and the dynamic interaction of coastal systems, such as coral reefs, intertidal ecosystems, severely affected through the resulting coastal erosion.

26. Traditional subsistence agriculture remains dominant in small island developing States, particularly on smaller islands. In principle, it is environmentally friendly, albeit characterized by low productivity. Under population and economic pressures, however, traditional systems, such as fallow rotation, are being replaced by more intensive exploitation, such as monocultures, excessive use of fertilizers and pesticides and intensive livestock production, which, in many places, is unsustainable because of the prevailing soil and environmental conditions.

27. The modification of coastal and marine ecosystems is of particular concern. Ecologically important coastal habitats, such as wetlands, estuaries and lagoons, are increasingly being reduced by land-reclamation schemes, unsustainable exploitation and the development of aquaculture. The degradation and loss of coral reefs is widespread. A number of factors contribute to this trend, such as removal for construction purposes, for, inter alia, dwellings, roads and airports, unsound fishing practices, including heavy and indiscriminate dredging and fishing with explosives, pollution and increased siltation, due to increased soil erosion. The spread of coral bleaching observed over the last five years is probably the first

6. The debate at the Stockholm Conference revealed a deep division between industrialized and developing countries over the issue of whether or not environmental protection and economic development were compatible. Nevertheless, concern about the risk of environmental harm prevailed and the Stockholm Declaration on the Human Environment adopted by the Conference led to a fundamental shift in international and national environmental law and practice.

7. The scope of numerous international agreements adopted since 1972 has expanded significantly: from bilateral transboundary pollution control to global pollution control; from the preservation of particular species to the conservation of entire ecosystems; from the control of direct point-source emissions to comprehensive pollution control regimes; from agreements that take effect only at national borders to ones that constrain activities and resources within the national borders. Indeed, there is not a single example in which the provisions of earlier conventions have been weakened; in all cases they have been strengthened or their scope has been expanded.

8. Two achievements were particularly notable in the post-Stockholm period: the protracted but ultimately successful negotiation of the United Nations Convention on the Law of the Sea, the negotiation of which commenced in 1970, leading to its adoption in 1982 and entry into force in 1994, and the proliferation of regional agreements.

9. Three main factors contributed to the development of the Convention on the Law of the Sea, the only comprehensive global ocean-related agreement:

(a) Bold and innovative concepts of ocean space were advanced, along with proposals for the management of this space through an integrated - rather than the traditional sectoral - approach;

(b) The ecological integrity of the ocean, and the power of human intervention to alter this integrity, was gradually gaining recognition; and

(c) The resources of the ocean lying outside the sovereignty of individual nations were increasingly regarded as the common heritage of humankind, thus requiring new types of institutional and legal arrangements for their management.

10. The Convention on the Law of the Sea, frequently called the "constitution of the oceans", provides the overarching international legal framework for the use and protection of the oceans. It is founded on the premise that the problems of the oceans are closely interrelated and need to be considered as a whole. It balances the rights and obligations of coastal States with the rights and obligations of all States to use the oceans and their resources in a rational way. In an offshore zone extending 200 miles (the exclusive economic zone), it grants the coastal States control over living and non-living resources, scientific research and environmental protection, subject to specific responsibilities. The Convention requires all States parties to conserve marine living resources, and to protect the entire marine environment. Its pollution control provisions cover all sources of pollution. Other issues covered by the Convention include,

larger-scale ecological effect which may be attributed to global climate change. Once extensive seagrass beds are now shrinking in size in consequence of the physical disturbance and pollution to which they are exposed.

28. The decline and loss of some fisheries resources, both in coastal waters and the adjacent exclusive economic zones, is far advanced. Overfishing of stocks or fishing with inappropriate methods, such as large-scale pelagic driftnets, are the main culprits. The problems are compounded by the lack of means in most small island developing States to control the foreign fishing fleets illegally operating in their exclusive economic zones. Coastal fish stocks, a once abundant and seemingly boundless source of animal proteins in most small island developing States, are severely depleted. Inappropriate fishing practices are also leading to large losses in non-targeted species, such as marine mammals, turtles and birds.

29. Aquaculture in many small island developing States is growing in importance as a substitute for proteins previously provided by capture fisheries. That growth is accompanied by the growth of its negative environmental effects: physical loss of mangroves and natural lagoon ecosystems and habitats, pollution from foodstuffs and chemicals used to promote the healthy growth of cultured organisms, and the ecological havoc and economic losses created by alien species introduced intentionally or unintentionally into the environment.

30. Although some small island developing States have set aside a considerable part of their territory, including coastal waters, as specially protected areas (for example, such areas in the Bahamas, Cape Verde and Fiji cover over 10 per cent of their land areas), in most other small island developing States the extent of such areas is almost negligible.

31. Aside from some positive developments, in general pollution caused by human, industrial and agricultural wastes is on the increase in most small island developing States. Pollution of scarce freshwater resources and pollution by sewage is of particular concern.

32. By virtue of their geographical location, small island developing States are exposed to major natural disasters, frequently of near-catastrophic proportions. Their limited capacity to respond to and recover from such disasters makes their ecosystems and their social economic fabric particularly vulnerable.

33. The first signs of effects attributable to global change, in the areas of climate and sea-level, are starting to be discernible. The number of storms is on the increase in some areas and the observed spreading of coral bleaching may have been triggered by sea temperature rise.

IV. MAJOR FUTURE ENVIRONMENTAL CHALLENGES FOR SMALL ISLAND DEVELOPING STATES

34. While considerable progress has been made in the implementation of the Programme of Action since it was adopted in 1994, a number of obstacles must be overcome for it to be more vigorously and efficiently implemented.

inter alia, maritime boundaries, navigation and overflight, the development and management of deep-sea minerals, piracy, illicit drug traffic and dispute settlement.

11. Although the prevailing trend in the late 1960s and early 1970s was to deal with the problems of oceans through global agreements, experience demonstrated that bilateral and regional arrangements could be very effective in dealing with specific problems of a particular region, including the exploitation of resources in that region. Following the successful conclusion of negotiations leading to the 1972 Oslo Convention, a large number of regional agreements were adopted with a focus on the protection of the marine environment from pollution. These include the agreements adopted in Helsinki and in Paris in 1974, in Barcelona in 1876, in Kuwait in 1978, in Abidjan and Lima in 1981, in Jeddah in 1982, in Cartagena in 1983 and in Noumea in 1986.

12. The regional agreements negotiated under the sponsorship of UNEP took the form of comprehensive framework conventions, with articles of a quite general nature which in themselves would have been of little practical relevance. The conventions are, however, supplemented with protocols and annexes specifying the actual measures to be implemented by the contracting parties. The general obligation specified in all conventions is to prevent, reduce, abate, combat and control pollution in the convention area. The specific obligations common to all conventions include: control of pollution caused by dumping, discharges from ships, exploration and exploitation of the continental shelf and land-based sources; cooperation in cases of emergencies; scientific and technical cooperation, including joint monitoring and research programmes, data and information exchange, and technical assistance; adoption of procedures for the determining of liability and compensation for damage resulting from violation of the convention or its protocols; reporting on measures adopted in implementation of the convention at the national level.

13. The convening of the 1992 United Nations Conference on Environment and Development and the adoption of two global conventions in conjunction with the Conference - the Convention on Biological Diversity and the United Nations Framework Convention on Climate Change - represent a milestone in the development of a broader interpretation of environmental protection, with far-reaching implications for the management and use of oceans and coastal areas.

14. The Conference adopted the Programme of Action for Sustainable Development (Agenda 21), which inseparably links social and economic development with environmental protection and stresses sustainable development as the only approach to development which could succeed in the long term. The Conference unambiguously declared, as one of the Agenda's basic principles, that, in order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it.

15. Chapter 17 of the Agenda (Protection of the oceans, all kinds of seas, including enclosed and semi-enclosed seas, and coastal areas and the protection, rational use and development of their living resources) explicitly recognized: that the oceans and adjacent coastal areas form an

35. In many instances, the current national development plans of small island developing States do not consider their developmental priorities in the context of the constraints posed by their environmental conditions. A better integration of economic goals and environmental concerns should therefore be achieved at national levels so as to ensure the protection and sustainable use of environmental resources.

36. The information base in small island developing States on the status of their natural resources and on the trends in the changes of these resources is still generally inadequate. A continuous assessment of the state of the environment and of the social and economic forces driving the environmental changes would have to be strengthened as an indispensable tool in national decision-making processes.

37. The production of wastes from various sources is on the increase in most small island developing States. Options for appropriate waste management are constrained by the inherent natural characteristics of such States, including the shortage of adequate funding. Pollution by human waste, and sewage in particular, is ubiquitous and - aside from being an aesthetic nuisance - represents a common source of infectious diseases. A special problem is posed by pollution from wastes originating from certain agricultural practices, such as the excessive use of fertilizers and pesticides, from animal husbandry and, in some small island developing States, by mining wastes.

38. Tourism, as one of only a very few development options for many small island developing States, continues to be of growing importance for their economies. Unfortunately, it is all too often developing without adequate concern for its long-term and cumulative environmental and economic impact, which may ultimately lead to the serious deterioration of environmental quality, the very basis for the development of attractive tourism. Efforts should be devoted towards diversifying tourism products, enhancing its quality and increasingly targeting the upper stratum of the tourist market. Linkages with other economic sectors should be strengthened in order to satisfy the consumer needs of tourists through domestic production to the maximum extent possible. The improvement and development of the physical infrastructure of small island developing States, such as airports, harbours, roads, telecommunication systems, freshwater supply, and so forth, would be needed for a more vigorous development of tourism.

39. Most small island developing States do not have sufficient conventional sources of energy, such as oil or coal. This increases pressure on such limited biological resources as firewood. The preferred solution to these problems should not be increasing imports of energy sources, but a more aggressive development of alternative sources of energy, such as sustainable fuelwood industry, biogas, solar and wind power, ocean thermal energy conversion and others.

40. Sea-level rise, and climate change in general, pose a special, and in the long term, the most serious problem for small island developing States, particularly the smaller islands and those with low-lying coastal areas. Impacts that may be felt in the near future are related to increased intensity and frequency of tropical storms and inundation of low-lying areas, resulting in damage to, or the loss of, coastal infrastructures, defence

systems, habitats and ecosystems, agricultural production, human settlements and human life. In the longer term, similar effects may be observed due to the gradual rise in sea-level. The rise in temperature may worsen the situation of coral reefs, through coral bleaching, affect the present vegetation cover and agricultural crops, influence the distribution of fisheries resources, and affect human health. Whenever possible, solutions to the predicted impacts should be sought primarily in affordable adaptations, particularly those which take full advantage of natural defence systems such as protection of coral reefs and mangroves, rather than in costly, large-scale engineering works.

41. Shortage of freshwater is a common characteristic of many small island developing States and one of the main constraints on their more vigorous economic and social development. The conservation of freshwater through improved watershed management would not only contribute to a sustainable supply of freshwater but also prevent soil erosion and thus help boost the agricultural potential of small island developing States.

42. The degradation and loss of terrestrial and coastal ecosystems and habitats is on the rapid increase in most small island developing States. The main causes are to be found in inadequate agricultural and fisheries practices, the ill-planned development of settlements and industries (including tourism), and the unsustainable use of biological resources. Many ecosystems and habitats have already been lost irretrievably and further losses and degradation can be prevented only through radical changes in national approaches to their protection. Beach erosion is a particular problem for most small island developing States.

43. The unsustainable use of biological resources is particularly evident in coastal zones. Coral reefs are being destroyed by their large-scale use for building material and in coastal construction work and by inappropriate fishing practices; mangroves are being removed for firewood and development of aquaculture; wetlands are being reduced by inappropriate land development schemes; and fisheries resources are declining as a result of overfishing, frequently conducted by illegally operating foreign fleets. An improved assessment of exploitable fish stocks and a better understanding of transboundary fish migrations would be required as the basis for the development of national fisheries policies and practices. Aquaculture has great potential in a number of small island developing States but its development should be carefully controlled, in order to avoid the negative environmental impacts which are frequently associated with fish and shrimp farms, including the potential hazards from the introduction of non-indigenous species.

44. Current trends of trade liberalization and globalization are bringing new challenges, as well as possible opportunities, for small island developing States. They would require certain institutional reforms, the adoption of responsive economic policy frameworks and human resources, in order to enhance the competitiveness of small island developing States and their ability to diversify into new activities. More attention would have to be paid to prevent trade and traffic in endangered species.

45. Currently, there are two additional factors which are adversely affecting the implementation of the Programme of Action, both related to international support for small island developing States. Over the last few years, the actual transfer of environmentally sound technologies to small island developing States was generally slow and uneven. This trend is further aggravated by declining levels of the flow of official development assistance (ODA) relative to gross national product (GNP), albeit compensated to a certain degree by some increase in private flows to certain small island developing States.

46. An intensified and more active participation in various regional and global agreements and programmes would certainly benefit small island developing States. It would facilitate their access to information, expertise and experience available in countries with problems similar to their own, would broaden the possibilities for receiving technical and financial assistance needed for furthering the goals of the Programme of Action, and would provide the mechanisms for coordinating specific activities under the Programme of Action at global and regional levels. Such cooperation would be of benefit not only to small island developing States. The protection of the environment of small island developing States, and of their unique ecosystems and rich biodiversity, is of global importance and in the interest of all countries.

47. The relevant regional seas programmes, particularly those covering the South Pacific and the Caribbean and supported by the Noumea and Cartagena conventions, offer a logical legal and organizational framework for the regionally coordinated implementation of the Programme of Action. Similarly, accession to global agreements and participation in global programmes may advance considerably the cause of small island developing States. Global agreements and programmes of particular relevance to the Programme of Action include: the United Nations Convention on the Law of the Sea, the Convention on Biological Diversity, the United Nations Framework Convention on Climate Change, the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities, the Code of Conduct for Responsible Fisheries, the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, the Protocol to the London Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the Convention for the Conservation of Migratory Species of Wild Animals, the International Coral Reef Initiative (ICRI), the Global Ocean Observing System (GOOS) and the International Geosphere-Biosphere Programme (IGBP).

48. Nearly all global agreements and programmes recognize the special status and needs of small island developing States and accord them due attention. For instance, the Jakarta Mandate on the Conservation and Sustainable Use of Marine and Coastal Biological Diversity (adopted in November 1995 by decision II/10 of the Conference of the Parties to the Convention on Biological Diversity) specifically refers to the importance of small islands' biological diversity and to actions required to improve the status of that diversity.

49. The special problems and requirements of small island developing States are also recognized by GEF in three of its four concentration areas: protection of biological diversity, mitigation of climate change impacts, and protection of international waters. In view of the chronic shortage of funds in small island developing States for environmental protection, GEF may be seen as a major source of funds for projects designed for the protection of their environment and for the promotion of their sustainable social and economic development.

50. Global, regional and, in particular, national non-governmental organizations already play an important role in the implementation of the Programme of Action, by promoting the environmental principles and concepts on which it is founded. That notwithstanding, their more active involvement at project implementation level should be promoted, as they are uniquely suited to deal with small-scale projects.

51. The implementation of the environmental aspects of the Programme of Action suffers from a number of shortcomings which also constrain the implementation of the Programme of Action as a whole. Most important among these are the following: inadequate coordination between the organizations and agencies supporting the Programme of Action; weak coordination at national levels; deficiencies in the capacity to implement the Programme of Action at national levels; the failure, in most countries, to integrate the Programme of Action into national development plans; the lack of provisions for monitoring the state of the environment and trends in environmental conditions; and the application of scientific, technological and managerial approaches which are inappropriate for small island developing States.

V. PROPOSALS FOR FUTURE UNEP ACTIONS TO ADDRESS THE ENVIRONMENTAL CHALLENGES FACING SMALL ISLAND DEVELOPING STATES

52. UNEP, in cooperation with the organizations supporting the Programme of Action and using the relevant regional components of the regional seas programme whenever appropriate, as well as its other UNEP programme elements of relevance to small island developing States, will continue contributing to the implementation of the Programme of Action through the activities identified in chapter II of the present document.

53. Particular attention will be paid to promoting the efficient protection and use of resources through integrated island management programmes, including, in most cases, the totality of the island's terrestrial environment, its coastline and the adjacent exclusive economic zones, by:

(a) Supporting the monitoring and assessment of the state of the environment of small island developing States, including: social and economic factors affecting the environment; changes in environmental concerns, priorities and policies; and trends in identified changes;

(b) Contributing to the development of the "vulnerability index" of small island developing States;

(c) Assisting countries in developing or strengthening their economic and legal instruments, including appropriate guidelines, for the improved protection and sustainable use of their resources through integrated island management programmes;

(d) Promoting the transfer of, and facilitating access to, scientific information and advice on technical means and technologies appropriate to small island developing States, with a view to ensuring cleaner industrial and agricultural production, improved public health and sanitation, and the rational utilization of living and non-living resources;

(e) Promoting tourism based on environmentally sustainable principles;

(f) Training local teams of managers, planners, technicians and scientists able to deal with island management programmes in an integrated way;

(g) Advocating the modification of national education systems and curricula at all levels, so as to give a better reflection of the special problems associated with the sustainable development of small island developing States;

(h) Promoting, preferably through local non-governmental organizations, public awareness about the need for sustainable development and resource use, and issues associated with it;

(i) Providing advice on the establishment or strengthening of national administrative structures, legal regimes and management procedures strengthening the capacity of small island developing States for the development and implementation of integrated island management programmes;

(j) Fostering research into traditional resource management and ensuring that traditional knowledge in this field is applied whenever appropriate under current conditions;

(k) Preparing guidelines and programmes for waste minimization, reduction, treatment and disposal which are suitable and applicable under the constraints of small island developing States, with special attention to very small islands;

(l) Disseminating information on available "soft" environmental management technologies, including policies, practices, management systems, regulatory frameworks and economic instruments, appropriate and relevant to the needs of small island developing States; and

(m) Developing integrated island management demonstration projects and their follow-up with wider institutional capacity-building strategies or mechanisms, in order to ensure the replicability and sustainability of the principles and methodologies being introduced trough the demonstration projects.